

PCT/NZ2004/000318

CERTIFICATE

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that annexed is a true copy of the Provisional Specification as filed on 19 December 2003 with an application for Letters Patent number 530271 made by BOARD & BATTEN INTERNATIONAL INC.

Dated 11 January 2005.



Neville Harris
Commissioner of Patents, Trade Marks and Designs



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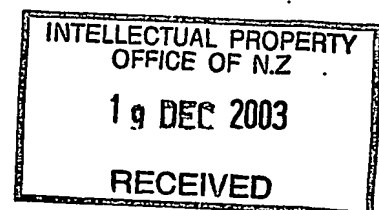
530271

NEW ZEALAND PATENTS ACT 1953

PROVISIONAL SPECIFICATION

TRAMPOLINE ENCLOSURE

We, BOARD & BATTEN INTERNATIONAL INC., c/- International Management Services Ltd., Harbour Centre 4th Floor, North Church Street, Georgetown, Cayman Islands, do hereby declare this invention to be described in the following statement:



TRAMPOLINE ENCLOSURE

FIELD OF THE INVENTION

The present invention relates to an enclosure for a trampoline that provides a rebounding surface in addition to the trampoline surface.

BACKGROUND TO THE INVENTION

Enclosures have been developed and sold to contribute to the safety of conventional trampolines. Such enclosures for trampolines are shown in Figure 1 and Figure 2. These enclosures are primarily designed as a safety device to prevent users falling from the trampoline. They are not suitable for users to deliberately bounce against them for play purposes. The enclosures are generally fairly rigid in nature, and especially the upright poles 1. Should a user deliberately jump into the enclosure, they could hit a rigid pole 1 and/or the outer horizontal frame that supports the trampoline mat. Both types of contact could result in injury to the user.

SUMMARY OF THE INVENTION

It is an object of the invention to provide a trampoline enclosure that provides a rebounding surface.

In one aspect the present invention may be said to consist in a trampoline enclosure adapted to be installed on a trampoline including: a plurality of resilient rods for attaching to the trampoline, and an enclosure wall for attaching to the rods and to, or in proximity to, the perimeter of the trampoline mat.

Preferably, in one form, the rod is made from pultruded fibreglass.

Preferably, in another form, the curtain is netting.

Preferably, in a further form, the top of the curtain includes pockets for attaching the curtain to the top of the rods. Preferably the rods have ball endings. Preferably, the pockets extend substantially the length of the rods.

In another form, the top of the curtain preferably includes fittings to capture the ball end of the rods. Preferably, the fittings are sewn into the top of the curtain.

In another form, a fitting is provided that preferably can attach or clamp to any point on the top of the curtain to capture the top end of the rods. Preferably, the rods are locked in to the fitting to prevent accidental removal.

In another form, the rods are preferably attached to the trampoline at a location on the frame or the legs of the trampoline. Preferably, the attachment is a socket connection. Preferably the bottom of the curtain has a band with holes or other means for connection of the curtain to the trampoline springs or to the spring attachment fittings on the mat. The enclosure may be supplied in component form as a kit, or preassembled, for attachment to the trampoline.

In another embodiment the present invention may be said to consist in a trampoline with an enclosure, the enclosure including: a plurality of resilient rods attached to the trampoline, and an enclosure wall attached to the rods and to, or in proximity to, the perimeter of the trampoline mat.

Preferably, in one form, the rod is made from pultruded fibreglass.

Preferably, in another form, the curtain is netting.

Preferably, in a further form, the top of the curtain includes pockets for attaching the curtain to the top of the rods. Preferably the rods have ball endings. Preferably, the pockets extend substantially the length of the rods.

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In a further form, the rods are preferably attached to the trampoline at a location on the frame or the legs of the trampoline. Preferably, the attachment is a socket connection. Preferably the bottom of the curtain has a band with holes or other means for connection of the curtain to the trampoline springs or to the spring attachment fittings on the mat.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the invention will be described with reference to the accompanying drawings, of which:

Figures 1 and 2 show conventional enclosures on rectangular and round trampolines,

Figure 3 shows a trampoline without enclosure but with pads covering the frame and springs

Figure 4 shows an enclosure according to one embodiment of the invention installed on a trampoline,

Figures 5, 6 and 7 show attachment brackets for the rod sockets,

Figures 8 and 9 show the attachment of the support rods to the pockets on the curtain,

Figures 10 and 11 show the attachment of the support rods to a cleat in the curtain,

Figure 12 shows a the assembly of long curtain pockets for the support rods (in this case on a soft edged trampoline),

Figure 13 shows the attachment of the curtain at the bottom,

Figure 14 shows a zipped opening in the enclosure wall.

Figure 15 shows the trampoline in use,

Figure 16 shows an example construction of a support rod joiner,

Figure 17 shows a higher placement of the support rod joiner,

Figures 18A and 18B show the affect of using a central joiner, and

Figures 19A and 19B show the affect of placing the support rod joiner higher.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention relates to an enclosure for a trampoline. An example a trampoline without an enclosure is shown in Figure 3. It has a steel frame outer edge 4, with multiple springs connected to it tensioning the mat. It has safety pads 2 covering the frame and springs.

The enclosure according an embodiment of the invention is adapted for use with the trampoline in Figure 3 is shown installed on the trampoline in Figure 4. It comprises flexible/resilient poles or rods 3 attached at one end to the trampoline frame 4 that extend vertically. A net curtain 5 or similar is attached to the poles 3 near the top 6 and also near the trampoline mat in a manner to be described with reference to Figures 13 and 14. The enclosure may come supplied with the trampoline, or separately, and may be factory fitted, or retrospectively self fitted. It may come in component form as a kit,

or preassembled for attachment to the trampoline. This provides an enclosure that is specifically designed to function as a play addition to a trampoline, such as that of Figure 3. The particular combination of

- (a) the trampoline with safety pads
- (b) enclosure, and
- (c) supported by flexible/resilient rods is

uniquely suited to the use of the enclosure in trampoline play because a jumper hitting the enclosure wall and falling on the trampoline safety pads is in little danger of injury as the trampoline pads are soft and designed for such an event. Also the flexible rods are both difficult for the jumper to hit and readily move on impact so as not to cause injury.

This is in contrast to conventional trampoline enclosures such as in Figure 1 and 2, which are designed purely for safety. With such a conventional trampoline enclosure, if a jumper impacts a support pole 1 it is relatively rigid. They are therefore not suited to using the enclosure for play, and are designed as safety features.

A possible embodiment of the enclosure also provides an enclosure net 5 with a substantially vertical, robust and resilient impact surface of sufficient strength to bounce a person back on to the trampoline. It also provides flexible support rods 3 (as shown in Figure 4) that

- (a) Are preferably removed from the curtain surface 5 as to be difficult to hit,
- (b) That are so flexible as to not cause injury when they are hit from the side,
- (c) That are so flexible as to not cause injury if landed on from above and
- (d) Provide enough tension to the net to give the required rebounding response to the jumper hitting it.

Mounting methods for the support rods can include socket connections, where the sockets receive the end(s) of the enclosure rod. The position and orientation of the

socket may be, in one embodiment, clamped on to the trampoline frame and leg as shown in Figures 5 & 6. The socket 7 includes a bracket portion for attachment around the leg. The bracket can be attached to the frame 4 using for example a bolt.

Further, in another form, the sockets 7 for the enclosure rods 3 could be made integral with the trampoline frame 4. As shown in Figure 7, the socket 7 is welded directly to the frame. It could alternatively be embedded within the frame. This form allows a simpler production since there is no need for attachment brackets. Also, since the socket 7 is within the frame, the stability and strength of the socket 7 may be improved from the designs in Figures 5 and 6.

To allow the rods 3 to bend under impact, the socket could be set at an angle from vertical. The sockets 7 shown in Figure 5 to 7 show such an angle.

The enclosure also provides the safety function achieved by conventional trampoline enclosures and it may be assembled on a trampoline for that purpose alone.

Further features may be provided for the trampoline enclosure as described above. For example, support rods 3, acting like fishing rods, are set to hold up and tension the upper edge 6 of the enclosure net adequately for the play function. The higher the tension in the support rods 3, the more rebound capability the enclosure net 5 has. In other words, where there is a need to provide a netting 5 with a high rebound capability, highly loaded rods 3, thicker rods 3 or more rods 3 could be employed.

Another optional feature could be providing enough support rods 3 to produce an enclosure that does not intrude over the jumping surface. In Figure 4, eight rods are used to achieve this.

The enclosure net 5 could include inverted pockets 8 in the top edge 6 to engage and retain the tops of the support rods 3, as shown in Figures 8 and 9. The inverted pockets 8 may be sewn onto the top edge of the enclosure net 5, or they may be attached by other means such as ties or Velcro straps. Additionally, support rods 3 could be fitted

with a ball-shaped end 9 to both engage the inverted pocket 8 and prevent the rod 3 from penetrating the net inverted pocket 8, especially on impact, as shown in Figures 8 and 9.

In a further form, the inverted pockets 8 may be replaced with fittings 10 that engage the ball-shape end 9 of the rod 3. An example of the fitting is shown in Figure 10. The fitting 10 could be a cleat that includes a socket cavity to receive the ball-shape end 9 of the rod 3 to form a pivotable connection. To ensure the fitting 10 itself is secured to the net top edge 6, the fitting 10 could be sewn into the net top edge 6. A hole is provided in the net top edge 6 to allow the ball-end 9 of the rod 3 to connect with the fitting 10.

In an optional arrangement, a clip cleat 10 is provided. A cut-away view of the clip cleat 10 is shown in Figure 11. The clip cleat 10 provides a latch-like clip 11 to retain the ball-end 9 in the socket cavity. With this arrangement, the rod 3 will not dislocate out of the cleat even if the trampoline user was to pull on the rod 3. To release the ball-end 9, the user will have to move the clip 11 downward before pulling the rod 3 out. This arrangement thus provides a greater safety feature of preventing accidental dislocation of the support rods 3.

In another optional arrangement, the inverted pocket 8 could be a long pocket 8 hanging from the top edge 6, covering the support rod 3. An example is shown in Figure 12. The advantages of this include additional safety against the rod 3 springing loose from the top edge 6 during an impact, and injuring a bystander: the rod 3 is fully contained in the long pocket 8. If the long pocket 8 is lined with a soft material such as foam, this can reduce any impact injury. Also, the long pocket 8 prevents a bystander from pulling the rod 3 down and out of the top socket, because the pocket has to be pulled at the same time.

Furthermore, the enclosure net 5 may have sewn into the bottom edge a band 12 of plain material with holes for hooking over on the trampoline springs as shown in Figure 13.

The enclosure net may also incorporate a door 14 which may be a flap sewn into the net, hung from its top edge and which seals around its edges with Velcro, or a door made with a zip 15 at the joint in the net as shown in Figure 14.

As previously described in the above preferred embodiments, flexible support rods 3 are used to support the enclosure net 5 to provide both safety and play functions. As shown in Figure 15, the flexible support rods 3 must be long enough to support, with tension, the height of the enclosure net 5. At the same time, the flexible support rods 3 must possess the strength to withstand the forces involved when the enclosure is used. For various reasons, the flexible support rods 3 are not manufactured as a single extruded rod, but are preferably a combination of multiple interjoined flexible support rods.

In one form, two flexible rods combine at substantially the centre point of the enclosure net 5. To ensure the secure coupling of the two flexible rods, a central joiner is provided. Referring to Figure 15, the central joiner is shown as 16.

Figure 16 shows one simple form of the central joiner 16. For a seamless connection, the central joiner 16 is shown to have substantially the same cross-sectional dimension as the flexible rods. On each end of the central joiner 16, a hollow passage 17 is provided. The passage 17 will receive an equivalently dimensioned protrusion 18 on the flexible rods. The protrusion 18 of the flexible rod could be attained by machining (e.g. using a lathe) the flexible rod end. Alternatively, the protrusion 18 could be formed during the extrusion of the flexible rods.

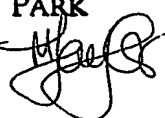
In an alternative form of the flexible support rod 3, the joiner for the individual flexible rods could be set higher along the length of the flexible support rod 3. An illustration of this form is shown in Figure 17. Shown as joiners 19, the relative difference in position when compared to the central joiners 16 is apparent.

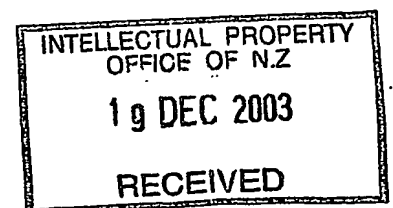
The reasons for this alternative arrangement of the joiners 19 are to:

- (a) move the joiner away from a point where a jumper could hit it.
- (b) reduce the stress on the joiner.

(c) use more convenient lengths of rod.

In a highly preferred embodiment, a long pocket 8, illustrated in Figure 12, receives the assembled support rods 3, such that the central joiner 16 or the joiner 19 is substantially covered by the long pocket 8. This prevents the support rods 3 from escaping from the central joiner 16 or joiner 19 and prevents the joiner becoming a projectile if the support rods 3 are pulled apart.

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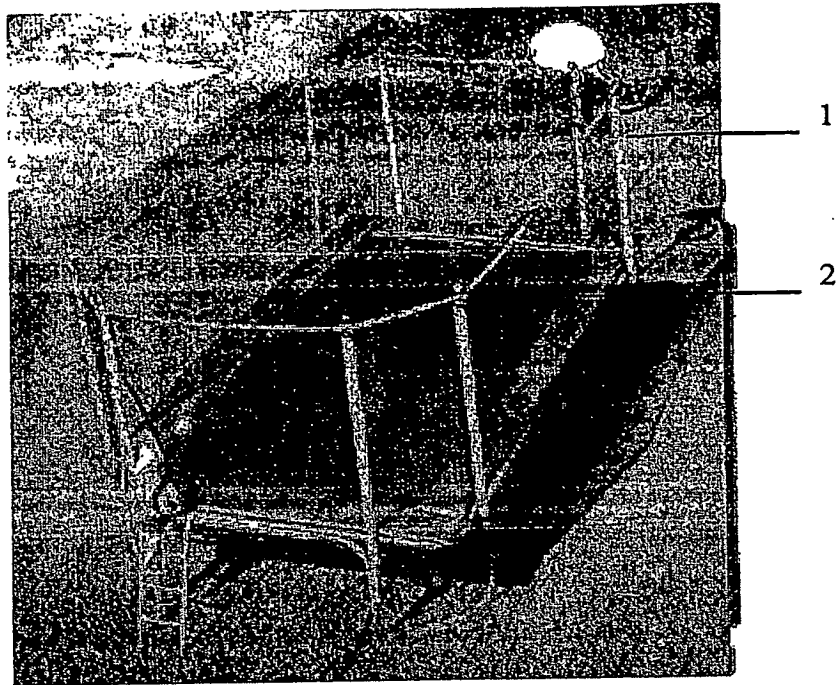


Figure 1

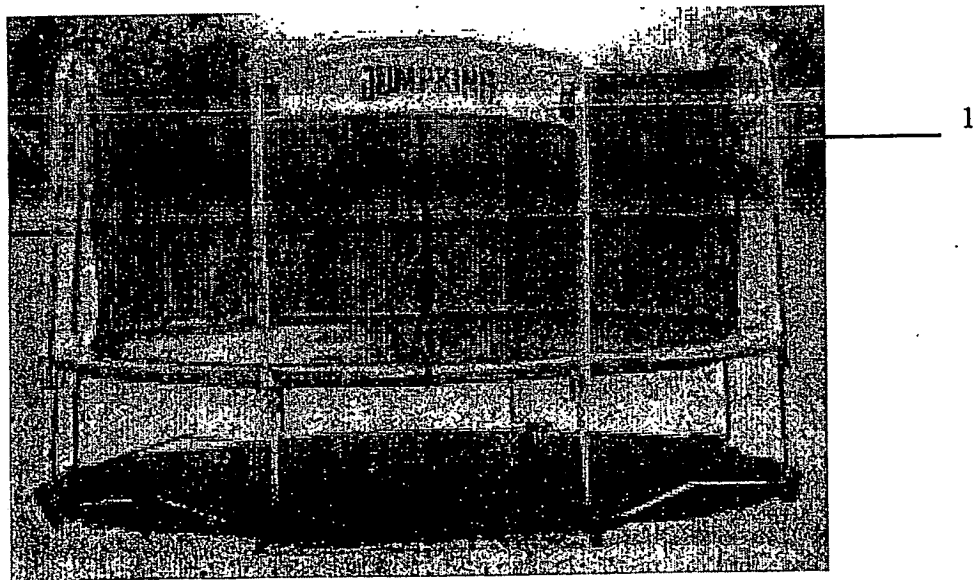


Figure 2

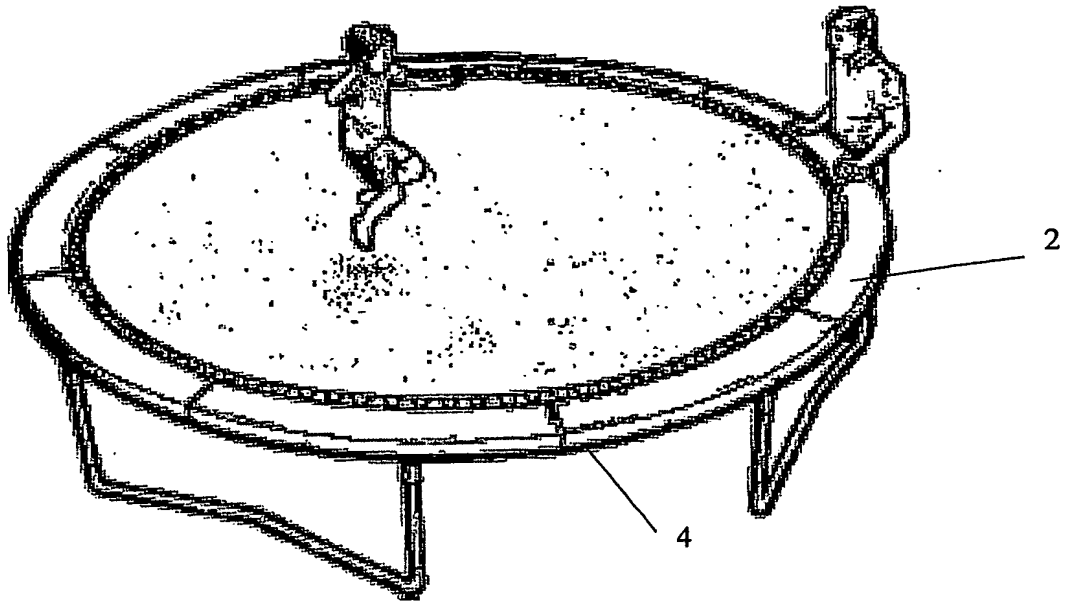


Figure 3

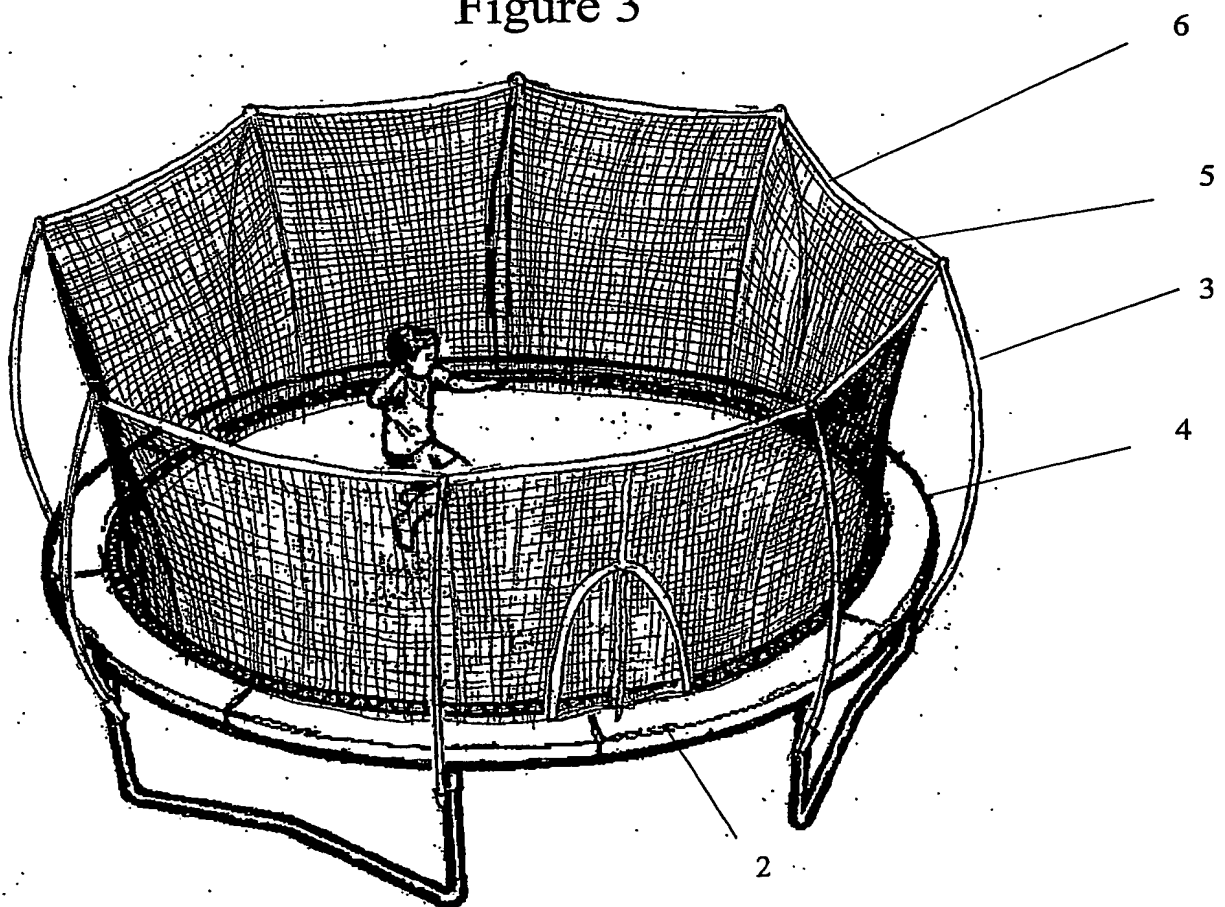


Figure 4

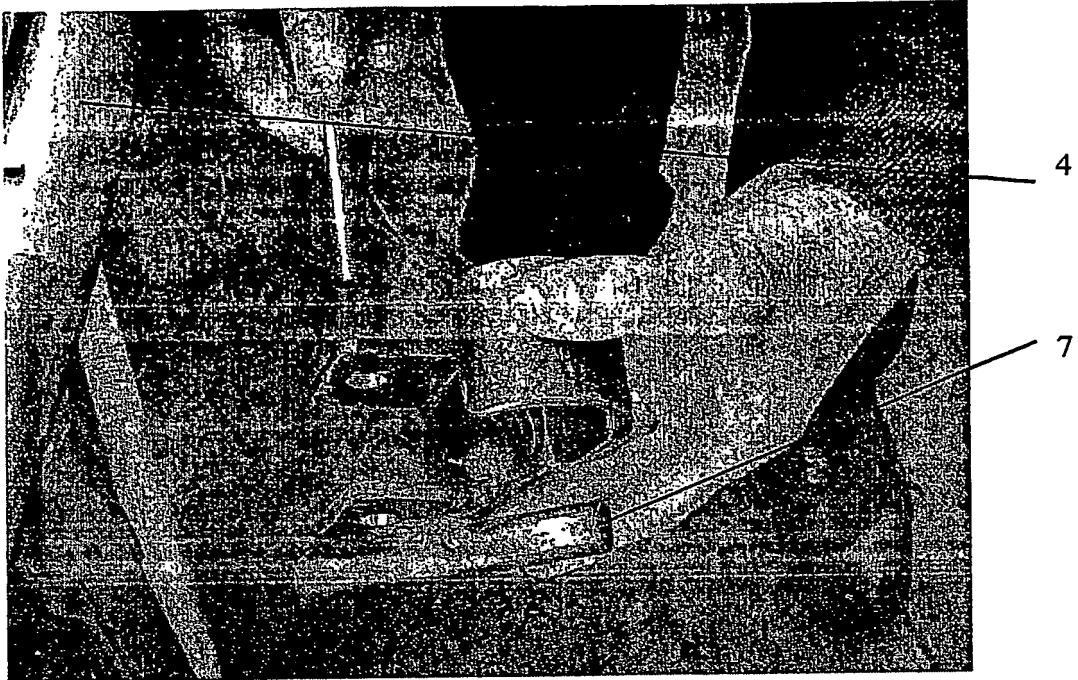


Figure 5

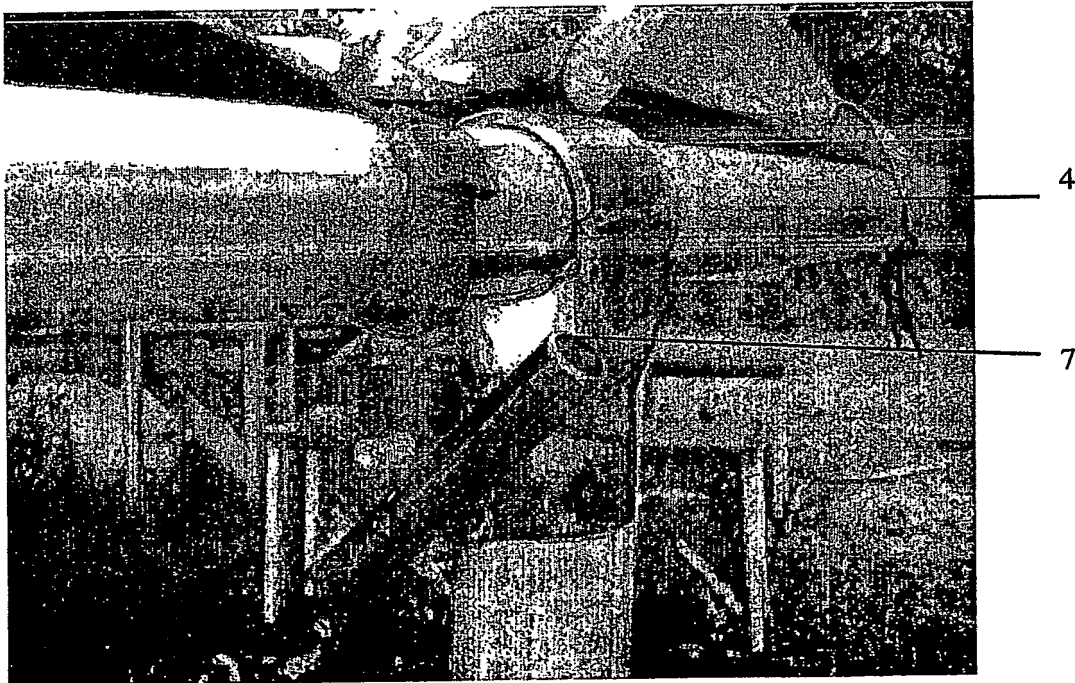


Figure 6

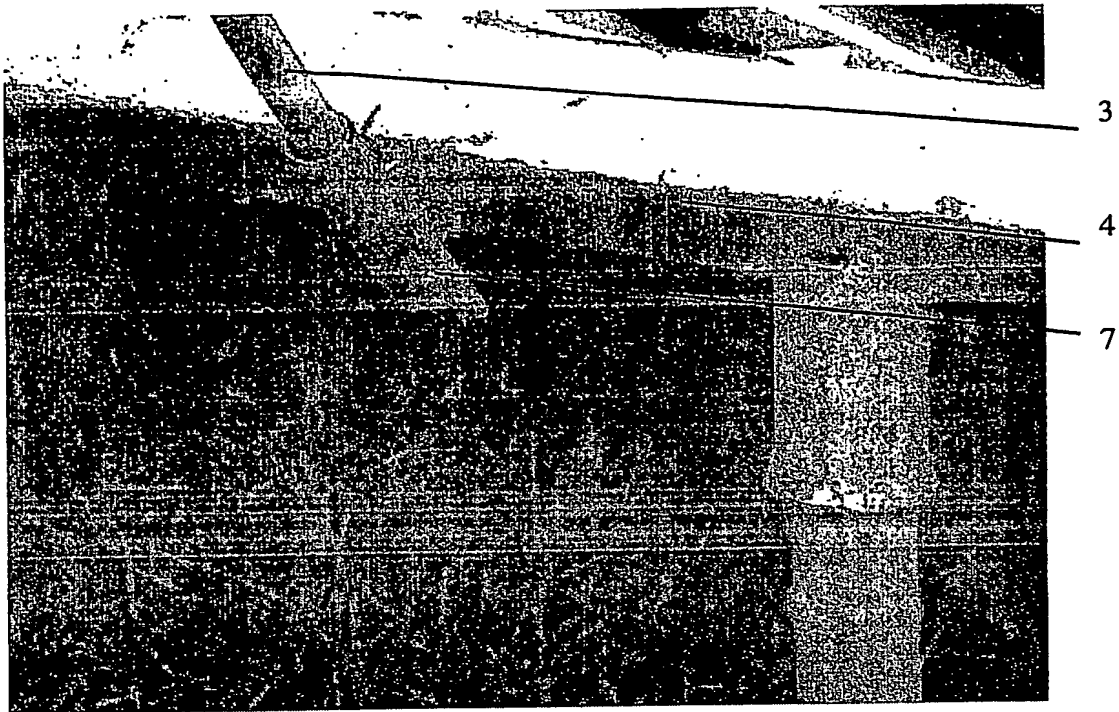


Figure 7

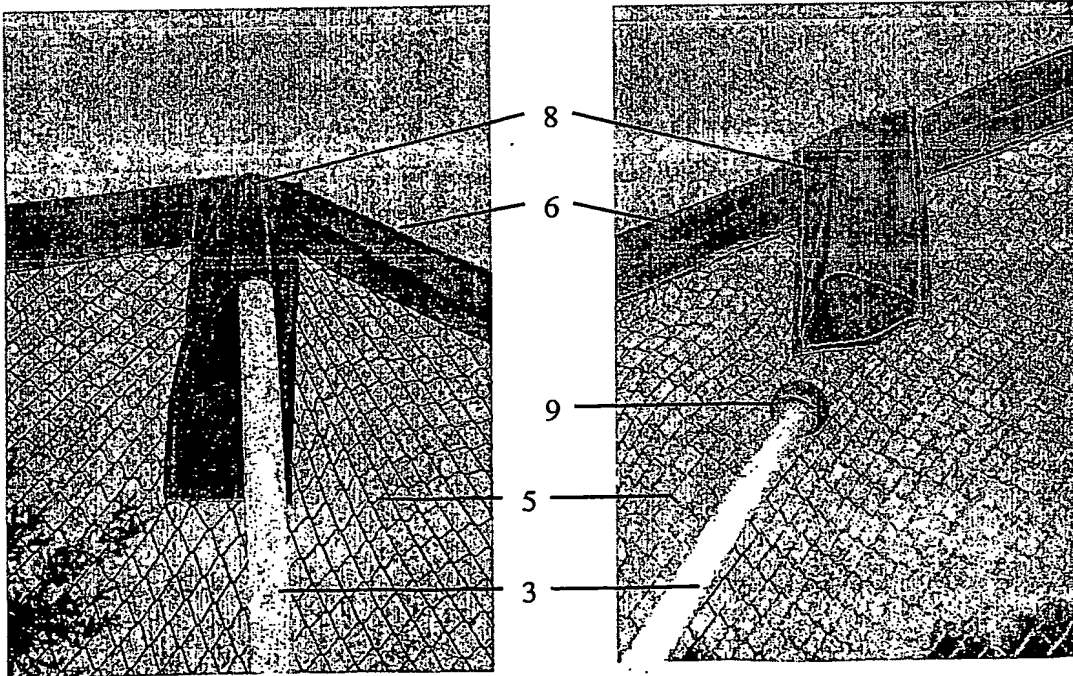


Figure 8

Figure 9

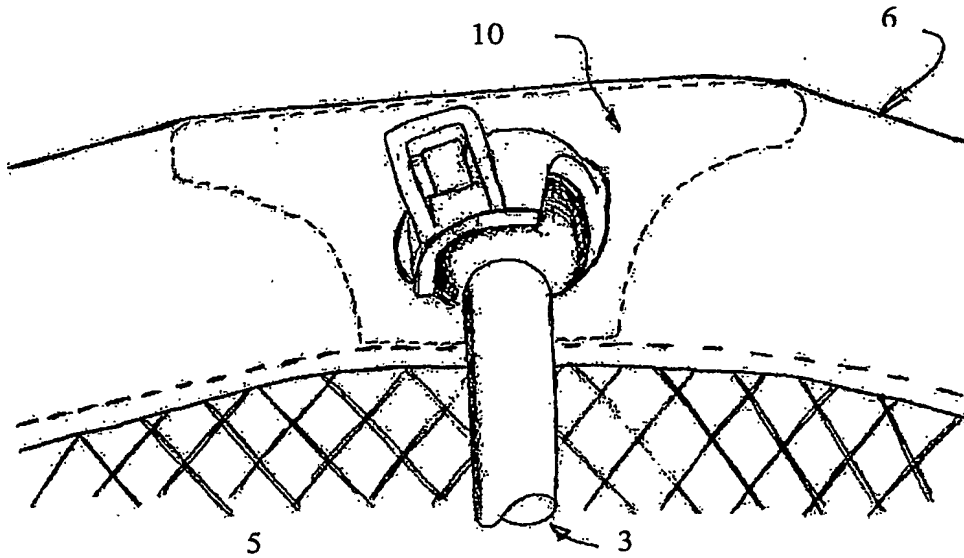


Figure 10

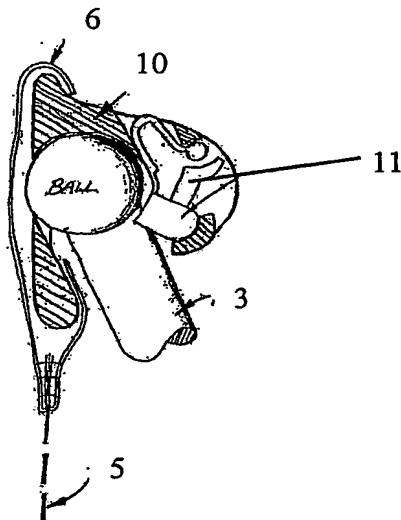


Figure 11

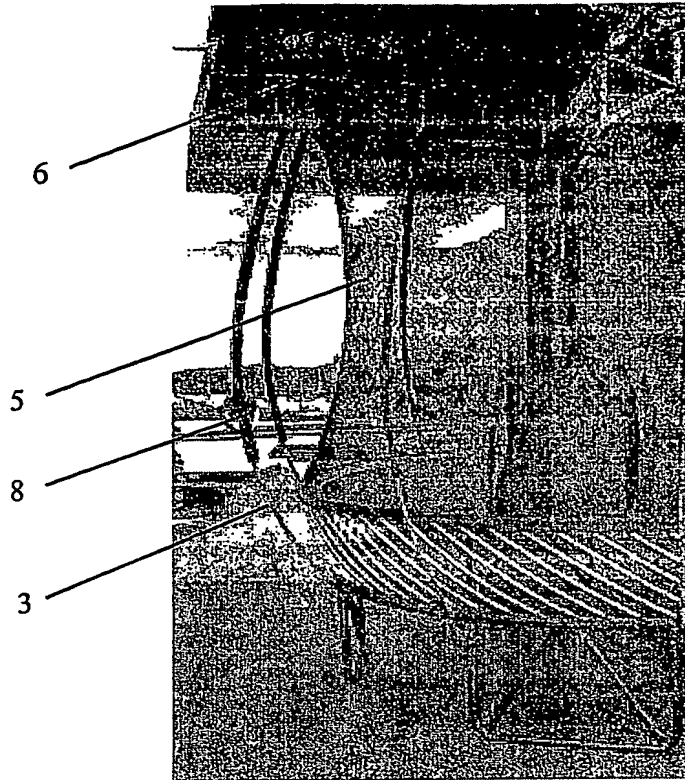


Figure 12

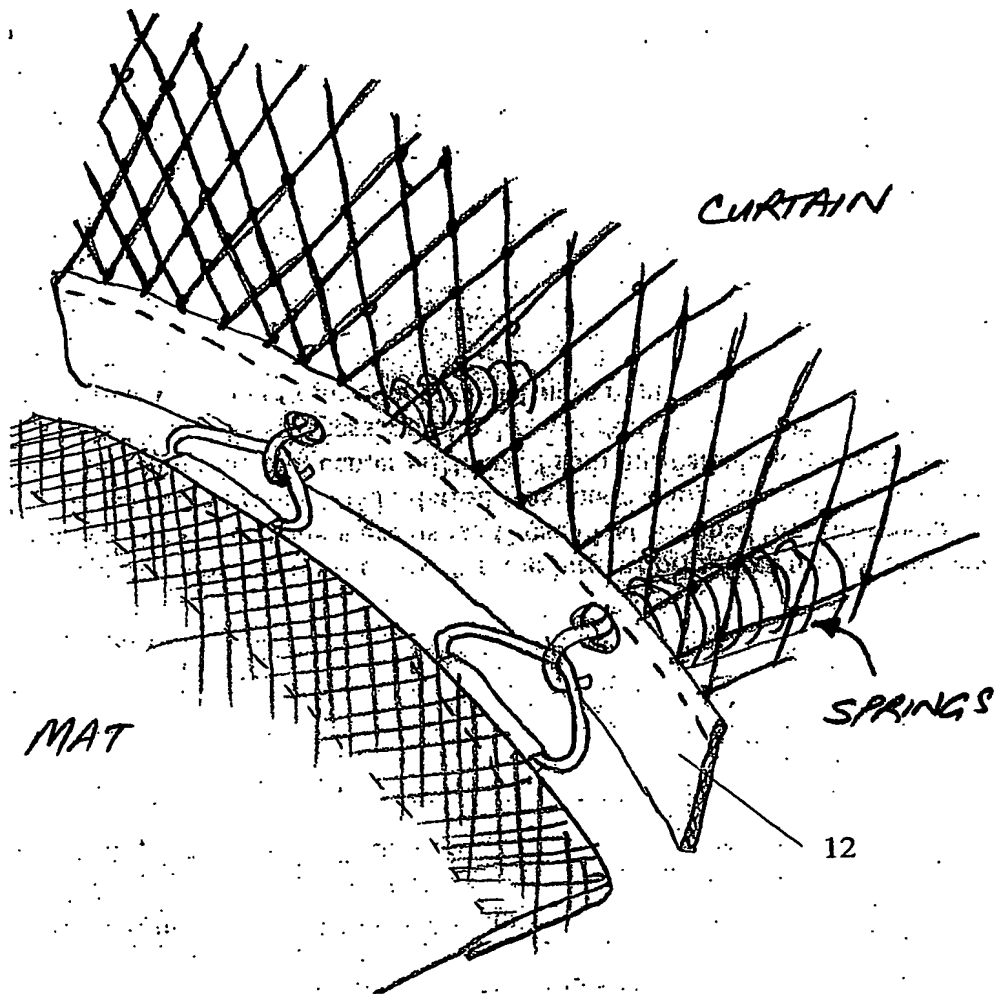
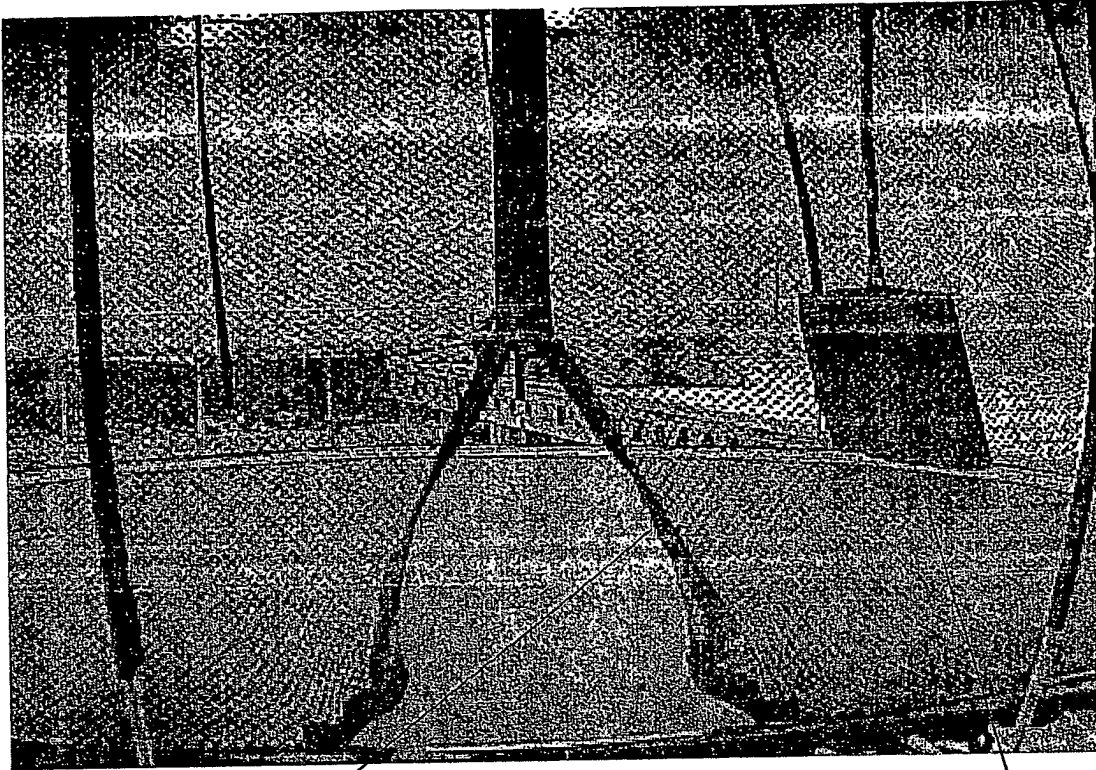


Figure 13



15

Figure 14

14



Figure 15

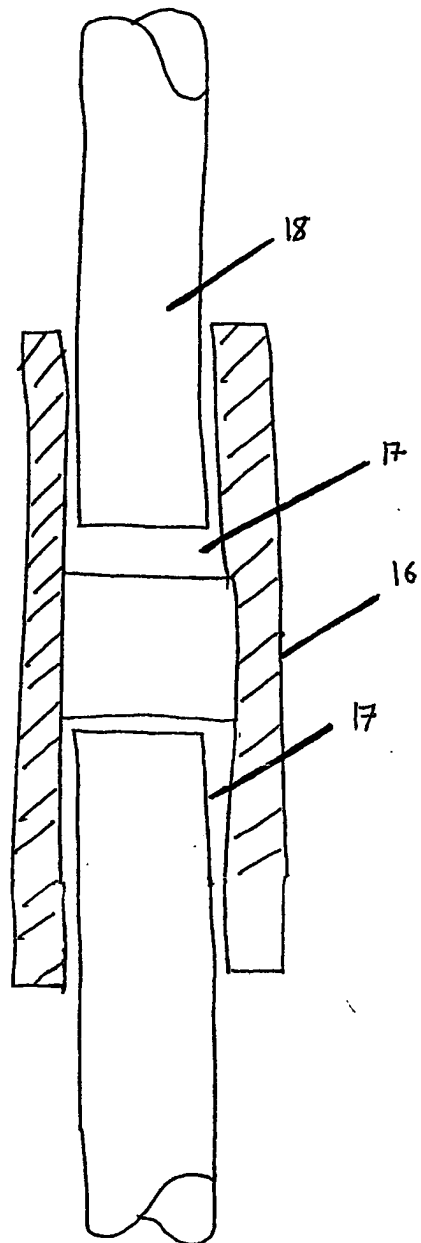


Figure 16

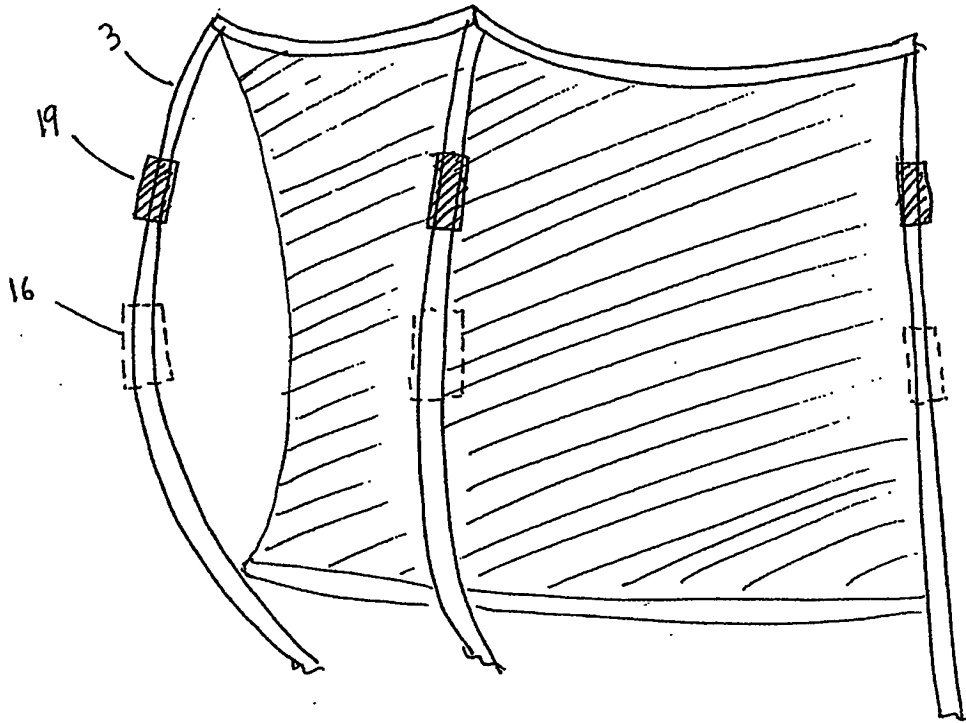


Figure 17

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